CLAIMS

What is claimed is:

1. An optical proximity correction (OPC) algorithm used in the photomask pattern design of a semiconductor process to reduce the optical proximity effect when transferring the photomask pattern from a photomask to the surface of a semiconductor wafer, the method comprising:

providing an original layout to be formed on the semiconductor wafer;

analyzing the image condition of the original layout by the operation of a reverse Fourier transformation on the original layout; and

creating a modified layout to be formed on the photomask according to the image condition;

wherein the modified layout is transferred from the photomask to the semiconductor wafer by a photolithographic process so that the semiconductor wafer produces a pattern the same as that of the original layout.

2. The method of claim 1 wherein the optical proximity correction algorithm is primarily used in a computer aided design (CAD) system.

3. The method of claim 1 wherein an exposure intensity of the original layout is computed using the reverse Fourier transformation method, followed by analysis of the image condition of the original layout according to the exposure intensity.

4. The method of claim 1 wherein the image condition refers to the slit geometry in the modified layout.

5. The method of claim 1 wherein a photoresist layer is positioned on the surface of the semiconductor wafer

as a photoactive material.

6. An optical proximity correction algorithm used in the photomask pattern design of a semiconductor process, the method comprising:

providing an original layout to be formed on the semiconductor wafer;

performing a first reverse Fourier transformation method on the original layout to analyze the image condition of the original layout;

creating a modified layout to be formed on a photomask according to the image condition of the original layout;

performing a second reverse Fourier transformation method on the modified layout to analyze the image condition of the modified layout; and

creating a photomask design pattern according to the image condition of the modified layout;

wherein the photomask design pattern is used to fabricate a pattern on the photomask, followed by the transfer of the pattern on the photomask to a semiconductor wafer via a photolithographic process.

7. The method of claim 6 wherein the optical proximity correction algorithm is primarily used in a computer aided design (CAD) system.

8. The method of claim 6 wherein the original layout is inputted and stored in a computer memory via an input device.

9. The method of claim 6 wherein the reverse Fourier transformation method is operated via a computer central processing unit.

10. The method of claim 6 wherein both the first and

second reverse Fourier transformation methods use the original layout or the modified layout to compute an exposure intensity, followed by the analysis of the image condition of the original layout or the modified layout according to the exposure intensity.

11. The method of claim 6 wherein the image condition of the original layout refers to the slit geometry in the modified layout while the image condition of the modified layout refers to the slit geometry in the photomask design pattern.

12. The method of claim 6 wherein a photoresist layer is positioned on the surface of the semiconductor wafer as a photoactive material.

13. A method of designing a photomask pattern comprising:

providing a defined pattern to be formed on the surface of a semiconductor wafer;

operating a reverse computation on the defined pattern to obtain the image condition composed of the defined pattern; and

designing the photomask pattern according to the image condition.

14. The method of claim 13 wherein the photomask pattern is used to fabricate a photomask, followed by the proportional transfer of the pattern on the photomask to the semiconductor wafer via a photolithographic process.

15. The method of claim 13 wherein the reverse computation comprises at least a reverse Fourier transformation method, which simulates the photomask pattern by analyzing the defined pattern on a

semiconductor wafer.

16. The method of claim 13 wherein the image condition refers to the slit geometry in the photomask pattern.

17. The method of claim 13 wherein a photoresist layer is positioned on the surface of the semiconductor wafer as a photoactive material.